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Information Science and Technology Center Seminar Series

Ulisses Braga-Neto
Texas A&M University

"Signal Processing Applications in Biomarker Discovery and Inference of Boolean Regulatory Networks"

Wednesday, May 4, 2011
3:00 - 4:00 PM
TA-3, Bldg. 1690 Room 102 (CNLS Conference Room)

Abstract: In this talk I will present our recent work on prediction and modeling of high-dimensional systems in living tissue, with application to biomarker discovery and the inference of Boolean regulatory networks. The first part of the talk will discuss biomarker discovery via Pattern Recognition and Bayesian Signal Processing methods applied to small-sample, high-dimensional data from gene-expression microarrays and protein-abundance Mass Spectrometry (LC-MS). The second half will deal with small-sample inference issues of discrete-time Boolean regulatory circuits. These involve models of highly-nonlinear dynamical systems that govern the evolution of cellular states, but which may be applied as well to climate, ocean dynamics and weather prediction.

Biography: Ulisses M. Braga-Neto received the Ph.D. degree in Electrical and Computer Engineering from The Johns Hopkins University in 2002. He held a post-doctoral fellowship at the University of Texas M.D. Anderson Cancer Center, Houston, from 2002 to 2004. He was with the Oswaldo Cruz Biomedical Foundation (FIOCRUZ), in Recife, Brazil, from 2004 to 2006. Since January 2007, he has been an assistant professor at the Department of Electrical and Computer Engineering of Texas A&M University, College Station, Texas. His current research interests involve the application of signal processing techniques to small-sample prediction and error estimation problems in Genomics and Proteomics. Dr. Braga-Neto collaborates with Translational Genomics, Phoenix, AZ, in the Partnership for Personalized Medicine (PPM) project on discovery and validation of proteomic biomarkers from human plasma LC-MS data. He also collaborates with the Center of Vaccine Research at the University of Pittsburgh and FIOCRUZ in Brazil on biomarker discovery for diagnosis/prognosis of Dengue and Yellow Fever. Prof. Braga-Neto received in 2009 a CAREER Award from the National Science Foundation for his research in these areas.

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